



May 2003

DE scientist selected as member of National Academy of Engineering

by Rich Garcia, Directed Energy Directorate

KIRTLAND AIR FORCE BASE, N.M. — Dr. Robert Q. Fugate, a senior scientist at the Air Force Research Laboratory's Directed Energy Directorate, has been selected as a member of the National Academy of Engineering.

Fugate, senior scientist for atmospheric compensation at the Directorate's Starfire Optical Range, will become a member of this non-profit institution that serves as an advisor to the federal government and examines important topics in engineering and technology.

He was selected, in part, for his pioneering work in laser guide star technology, which uses lasers to form artificial stars or laser beacons in the upper atmosphere. Coupled with deformable optics and computers, this technology makes practical the ability to compensate for atmospheric distortions and enables forming clear images of objects in space.

The technology developed under Fugate's leadership has been widely adopted by the astronomy community and is being incorporated into every major, large civilian telescope currently under development.

A variation of the technology has also been applied to human vision research, allowing doctors to see individual cells in the human retina at the back of the eye. High-resolution images of the living retina allow the diagnosis of conditions such as glaucoma at a much earlier stage.

The Starfire Optical Range has developed and currently operates the world's most advanced, highest performance adaptive optical systems in existence, and is considered by many in the astronomy community as being in the forefront of developing leading edge atmospheric compensation technology for large ground-based telescopes.

A member of the scientific and professional cadre of senior executives, Fugate has been a U.S. Air Force employee since 1970. He has received approximately two-dozen national honors and awards, and has authored and delivered numerous articles and technical papers.

The National Academy of Engineering, founded in 1964, operates under the same congressional act of incorporation signed in 1863 by President Lincoln. Under this charter, the academy is directed "whenever called upon by any department or agency of the government, to investigate, examine, experiment, and report upon any subject of science or art." @



Dr. Robert Q. Fugate